REMARKS

Claims 1-21 are pending in the application and have been examined. Claims 1-21 stand rejected. Claim 1 has been amended. Claims 14 and 20 have been canceled. Claims 23 and 24 have been added. The claim amendments submitted herewith replace the amendments submitted by Applicants in the paper entitled Amendment After Final, mailed on May 8, 2007, which were not entered. Reconsideration and allowance of Claims 1-13, 15-19, 21, 23 and 24 is respectfully requested.

Interview Summary

Applicants' attorney wishes to thank the Examiner for granting a telephonic interview on August 7, 2007. The participants in the interview were Examiner Annette Para and applicants' attorney Tineka Quinton. The prior art reference was discussed; however, no agreement was reached.

The Rejection of Claims 1-18 and 20-21 Under 35 U.S.C. § 102(b) as Being Anticipated by U.S. 5,294,549 (Pullman et al.)

Claims 1-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 5,294,549 (Pullman et al.).

Without acquiescing to the Examiner's position, but in order to facilitate prosecution, Claim 1, from which Claims 2-13, 15-19, 21, 23 and 24 depend, has been amended to clarify the invention. Claims 14 and 20 have been canceled. Claim 1 as amended recites:

> Claim 1 (Currently amended) A method for producing a synchronized population of conifer somatic embryos, the method comprising:
>
> (a) cultivating pre-cotyledonary conifer embryogenic cells in, or on a maintenance medium comprising nutrients that sustain the embryos and one or more agents for adjusting the osmolality of the medium to a desired range;

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1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

(b) cultivating pre-cotyledonary conifer embryogenic cells from step (a) for a period from 0.5 weeks to 5 weeks in, or on, a synchronization medium that comprises an absorbent composition and at least one synchronization agent selected from the group consisting of abscisic acid and a gibberellin, wherein the absorbent composition and the at least one synchronization agent are present at a concentration effective to produce a synchronized population of pre-cotyledonary conifer somatic embryos wherein at least 50% of the embryos in the synchronized population are at the same developmental stage; and

(c) transferring the synchronized population of pre-cotyledonary conifer somatic embryos from step (b) to a development medium and incubating the embryos for a period from 9 to 14 weeks to produce a synchronized population of cotyledonary conifer somatic embryos.

Support for this amendment is found in the Specification as filed, for example at page 2, lines 26-27; page 7, lines 28-30; page 8, lines 1-13; page 9, lines 5-29; page 11, lines 7-14; and Examples 1 and 2.

It is respectfully submitted that Pullman et al. does not anticipate the claimed invention as amended. In order to anticipate, the reference must disclose, either expressly or inherently, each and every element of the claim. M.P.E.P. 2131.

The present invention is generally directed to culturing conifer embryos in synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberellin prior to incubation in development media. As described in the instant specification,

> [c]leavage polyembryony (embryonal suspensor mass proliferation) continues in cultures after plating onto development medium, and new embryos are beginning to develop even after eight weeks of culture on development medium. Due to this continuing cleavage, embryos are not uniform in stage, shape, size or quality within a single plate. This lack of uniformity detrimentally affects the efficiency of somatic cloning of conifers. The present invention addresses the problem of unsynchronized development of conifer embryogenic cells, including ESMs, by culturing the embryonic cells in, or on, a synchronization medium that causes the majority of embryos in a population of conifer somatic embryos to progress through successive developmental stages together to yield a synchronized population of mature conifer somatic embryos that can be germinated to form conifer plants.

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1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

(Specification at page 4, lines 18-28.)

As described in Examples 1 and 2 of the instant specification, the present inventors discovered through experimentation that culturing conifer embryos in synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberellin prior to incubation in development media inhibited precocious embryo development and greening, while promoting singulation and synchronization of the cultures, resulting in embryos very uniform in size in comparison to control cultures. See specification at page 19, lines 19-31.

Pullman et al. does not remotely teach, suggest, or provide any motivation to produce a synchronized population of cotyledonary conifer somatic embryos as claimed. Therefore, it is noted that the incubation in synchronization media for 0.5 to 5 weeks prior to incubation in a development media as recited in Claim 1 step (b) is an important distinction between the Pullman et al. reference and the present invention.

In contrast to the present invention, Pullman et al. is directed to the use of gibberellin along with abscisic acid in the development medium during somatic embryogenesis. See Pullman et al., Col. 10, lines 15-17. As shown in Table 2 of Pullman et al., the multistage culturing process of Pullman et al. for somatic embryogenesis in Douglas fir includes Stage I: initiation; Stage II: Maintenance 1; Stage III: Maintenance 2; Stage IV: Singulation; Stage V: Development; and Stage VI: Germination. As further shown in Table 2, only at Stage V: Development does the medium include activated charcoal and at least one of abscisic acid or gibberellins.

In the Advisory Action mailed on June 12, 2007, with reference to Example 9, the Examiner asserted that "Pullman et al. teach column 22, Table 9, media 1 and 2 initial medium then transferred to a medium comprising ABA and charcoal (medium 1) or comprising ABA, GA and charcoal (medium 2)." However, applicants wish to point out, contrary to the

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Suite 2800
Seattle, Washington 98101
206.682.8100

Examiner's assertion, that column 22, Table 9 clearly states that "no transfers made" for media 1 and media 2. As further described in Examples 8 and 9 of Pullman et al., Norway Spruce late stage proembryos referenced in Table 9 (including those incubated in media 1 and media 2) were plated directly from a maintenance medium onto solid development media containing various concentrations of ABA and GA. Therefore, based on the description in Example 8 and 9 of Pullman et al., the embryos incubated in media 1 and media 2 were plated directly from a maintenance media onto the respective development media and incubated on the same development media during the entire development time, with no pre-development synchronization step.

In this regard, the Examiner has further asserted that "similar methods are presumed to inherently possess the same properties." However, contrary to the Examiner's assertion, it is further noted that the methods described in the Pullman et al. reference do not inherently possess the same properties of the claimed invention. With regard to inherency, as stated in M.P.E.P. Section 2112, "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

As described in Example 2 of the instant specification, it was experimentally demonstrated that in the absence of the step of culturing in a synchronization medium, the control cultures grown in maintenance medium and directly transferred to development media (similar to the method in Pullman et al.) were cleaving, growing and forming embryo suspensor masses, with embryos seen in many different stages.

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1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

It is noted that the media used in the treatment of the control culture in Example 2 of the instant specification is very similar to the media used in the treatment of the embryos using media 1 in Example 9 of Pullman et al., as shown in the table below.

Comparison Between Example 9 of
Pullman et al. and Example 2 in the instant Specification

Media	Pullman et al (Example 9)	Present Invention (Example 2)
Maintenance	BM_B + 2,4,-D (5uM); Kinetin (2uM); BAP (2uM) (see TABLE 8)	BM_2 + 2,4-D (5uM); Kinetin (0.5uM); BAP (0.5uM) (See TABLE 2)
Development	Media 1: BM_D+ 50mg/L ABA; 0.125% activated charcoal (see TABLE 9)	BM_4 + 25 mg/L ABA; 0.1% activated charcoal (see TABLE 2)

As mentioned above, Example 2 of the instant specification demonstrates that control cultures grown in maintenance medium and transferred directly to development media containing 25mg/L ABA and 0.1% activated charcoal (see TABLE 2) did not result in a synchronized population and instead were observed to be cleaving, growing and forming embryo suspensor masses, with embryos seen in many different developmental stages. See specification at page 19, lines 1-5. Therefore, because the media 1 conditions of Pullman et al. are very similar to that of the control culture in Example 2, a similar result would be expected, with no synchronization.

In sharp contrast, as further described in Example 2 of the instant specification, embryos that were cultured in synchronization media prior to incubation in development media "were

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1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

very uniform in size compared to the control embryos." Specification at page 19, lines 25-26. The study described in Example 2 concluded that "uniform growth of early stage embryos before transfer to development medium can be achieved by pre-treating cultures in a synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberelin. This treatment synchronized cotyledonary embryo development and maturation." Page 19, lines 27-31.

Because Pullman et al. does not disclose or suggest culturing conifer embryos in a synchronization medium prior to development as claimed, the cited reference fails to teach or suggest all the elements of the claimed invention and therefore does not anticipate or render obvious the method of the claimed invention.

Thus, it is submitted that Pullman et al. does not anticipate nor render obvious the claimed invention, as amended. Removal of this ground of rejection is respectfully requested.

The Rejection of Claim 19 Under 35 U.S.C. § 103(a) as Being Unpatentable Over U.S. 5,294,549 (Pullman et al.)

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 5,294,549 (Pullman et al.).

It is submitted that the Examiner has failed to establish a *prima facie* case of obviousness because Pullman et al. fails to disclose or suggest all the claimed elements of the claimed invention. Claim 19 depends from Claim 1, which has been amended as described. For at least the reasons described above, amended Claim 1 is neither anticipated nor rendered obvious by the Pullman et al. reference. Moreover, as previously acknowledged by the Examiner, Pullman et al. fails to teach a method for producing a synchronized population of Loblolly pine embryos as required by Claim 19.

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1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

Therefore, the cited reference fails to teach or suggest all the elements of the invention as claimed. Removal of this ground of rejection is respectfully requested.

New Claims

New Claims 23 and 24, which each depend from Claim 1, have been added and are each directed to osmolality ranges of one or more of the maintenance media, synchronization media and development media. Support for Claim 23 is found in the specification as filed, for example at page 16, lines 11-17, lines 26-30; and page 17, lines 9-11. Support for Claim 24 is found in the specification as filed, for example at page 7, lines 24-25; page 9, lines 5-8; and page 21, lines 20-21. No new matter has been introduced.

CONCLUSION

In view of the foregoing, applicants submit that all of the pending claims are in condition for allowance and notification to this effect is respectfully requested.

Respectfully submitted,

CHRISTENSEN O'CONNOR
JOHNSON KINDNESS PLLC

Tineka J. Quinton
Registration No. 53,496
Direct Dial No. 206.695.1655

TJQ:jh

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100